

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yuji Fujiwara; Masakazu Nishino; : Art Unit:
 Mitsuhiro Miyashita : Examiner:
 Serial No.: To Be Assigned :
 Filed: Herewith :
 FOR: IMAGE SIGNAL ENCODING :
 DEVICE AND IMAGE SIGNAL ENCODING
 METHOD

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
 Washington, D.C. 20231

S I R :

Prior to examination, please amend the above-identified application as follows:

SPECIFICATION:

Please replace the paragraph beginning at page 6, line 4, with the following:

One aspect of the present invention is an image signal encoding device comprising at least encoding means of dividing a luminescence signal and color-difference signals of image signals into macro blocks having a plurality of sub macro blocks and encoding data of the macro blocks with use of any one of a plurality of compression modes of which compression rate is different each other, wherein the total numbers of sub macro blocks in said each macro block are the same for the use of said all kinds of compression modes.

Please replace the paragraph beginning at page 6, line 14, with the following:

Another aspect of the present invention is the image signal encoding device, wherein in said macro block, the ratio between sub macro blocks of said luminescence signal and sub macro blocks of said color-difference signals varies depending on said each compression modes.

Please replace the paragraph beginning at page 6, line 20, with the following:

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Still another aspect of the present invention is an image signal encoding device comprising at least encoding means of dividing a luminescence signal and a color-difference signal of image signals into units of macro block having a plurality of sub macro blocks, and encoding data in the macro block;

placing means of placing encoded data into sync blocks each having a predetermined number of sub sync blocks each assigned a predetermined initial amount of codes,

wherein said placing means arranges the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block so that that for said sub sync block of said color-difference signal of red color is different from that for said sub sync block of said color-difference signal of blue color.

Please replace the paragraph beginning at page 7, line 10, with the following:

Yet another aspect of the present invention is the image signal encoding device, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that that for said sub sync block of said color-difference signal of red color is greater than that for said sub sync block of said color-difference signal of blue color.

Please replace the paragraph beginning at page 7, line 17, with the following:

Still yet another aspect of the present invention is the image signal encoding device, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that that for sub sync block of said color-difference signal of red color equals that for sub sync block of said luminescence signal.

Please replace the paragraph beginning at page 7, line 24, with the following:

A further aspect of the present invention is the image signal encoding device, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that the ratio thereof among sub sync block of said luminescence signal and sub sync block of said color-difference signal of red color and sub sync block of said color-difference signal of blue color is 5: 5: 4.

Please replace the paragraph beginning at page 8, line 7, with the following:

A still further aspect of the present invention is the image signal encoding device, further comprising rate converting means of switching a kind of rate

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conversion with band limitation applied to said image signals, in accordance with the type of said compression mode,

wherein said encoding means equalizes the compression rates of said image signals subjected to rate-conversion, in all said compression modes.

Please replace the paragraph beginning at page 8, line 16, with the following:

A yet further aspect of the present invention is an image signal encoding method comprising at least an encoding step of dividing a luminescence signal and color-difference signals of image signals into macro blocks having a plurality of sub macro blocks, and encoding data of the macro blocks with use of any one of a plurality of compression modes of which compression rate is different each other,

wherein the total numbers of sub macro blocks in said macro block are the same for the use of said all kind of compression modes.

Please replace the paragraph beginning at page 9, line 1, with the following:

A still yet further aspect of the present invention is the image signal encoding method, wherein in said macro block, the ratio between sub macro blocks of said encoded luminescence signal and sub macro blocks of said encoded color-difference signals varies depending on said each compression modes.

Please replace the paragraph beginning at page 9, line 7, with the following:

An additional aspect of the present invention is an image signal encoding method comprising at least an encoding step of dividing a luminescence signal and a color-difference signal of image signals into units of macro block having a plurality of sub macro blocks, and encoding data in the macro blocks;

placing steps of placing encoded data into sync blocks each having a predetermined number of sub sync blocks each assigned a predetermined initial amount of codes,

wherein in said placing step, the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is arranged so that that for said sub sync block of said color-difference signal of red color is different from that for said sub sync block of said color-difference signal of blue color.

Please replace the paragraph beginning at page 9 line 22, with the following:

A still additional aspect of the present invention is the image signal encoding method, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that that for said

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sub sync block of said color-difference signal of red color is greater than that for said sub sync block of said color-difference signal of blue color.

Please replace the paragraph beginning at page 10, line 4, with the following:

A yet additional aspect of the present invention is the image signal encoding method, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that that for sub sync block of said color-difference signal of red color equals that sub sync block of for said luminescence signal.

Please replace the paragraph beginning at page 10, line 11, with the following:

A still yet additional aspect of the present invention is the image signal encoding method, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that the ratio thereof among sub sync block of said luminescence signal and sub sync block of said color-difference signal of red color and sub sync block of said color-difference signal of blue color is 5 : 5 : 4.

Please replace the paragraph beginning at page 10, line 19, with the following:

A supplementary aspect of the present invention is the image signal encoding method, further comprising a rate converting step of switching a kind of rate conversion with band limitation applied to said image signals in accordance with the type of said compression mode, wherein in said encoding step, the compression rates of said image signals subjected to rate conversion are equalized in all said compression modes.

Please replace the paragraph beginning at page 11, line 4, with the following:

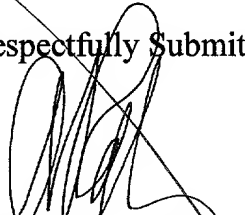
A still supplementary aspect of the present invention is a program for making a computer serve as the encoding means of dividing a luminescence signal and color-difference signals of image signals into macro blocks having a plurality of sub macro blocks and encoding the macro blocks selectively in any one of a plurality of compression modes of which compressing rate is different each other in the image signal encoding device.

Please replace the paragraph beginning at page 11, line 12, with the following:

A yet supplementary aspect of the present invention is a program for making a computer serve as all or a part of the encoding means of dividing a luminescence signal and a color-difference signal of image signals into units of macro block having a plurality of sub macro blocks, and encoding data in the macro block,

and placing means of placing encoded data into sync blocks each having a predetermined number of sub sync blocks each assigned a predetermined initial amount of codes in the image signal encoding device.

Respectfully Submitted,



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Attorney for Applicants

AR/jam

Enclosure: Version with marking to show changes made

Dated: March 19, 2001

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Kathleen Libby

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VERSION WITH MARKINGS TO SHOW CHANGES MADESPECIFICATION:

Specification at page 6, line 4:

~~The 1st invention~~ One aspect of the present invention is an image signal encoding device comprising at least encoding means of dividing a luminescence signal and color-difference signals of image signals into macro blocks having a plurality of sub macro blocks and encoding data of the macro blocks with use of any one of a plurality of compression modes of which compression rate is different each other,

wherein the total numbers of sub macro blocks in said each macro block are the same for the use of said all kinds of compression modes.

Specification at page 6, line 14:

~~The 2nd invention~~ Another aspect of the present invention is the image signal encoding device ~~according to 1st invention~~, wherein in said macro block, the ratio between sub macro blocks of said luminescence signal and sub macro blocks of said color-difference signals varies depending on said each compression modes.

Specification at page 6, line 20:

~~The 3rd invention~~ Still another aspect of the present invention is an image signal encoding device comprising at least encoding means of dividing a luminescence signal and a color-difference signal of image signals into units of macro block having a plurality of sub macro blocks, and encoding data in the macro block; placing means of placing encoded data into sync blocks each having a predetermined number of sub sync blocks each assigned a predetermined initial amount of codes,

wherein said placing means arranges the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block so that that for said sub sync block of said color-difference signal of red color is different from that for said sub sync block of said color-difference signal of blue color.

Specification at page 7, line 10:

~~The 4th invention~~ Yet another aspect of the present invention is the image signal encoding device ~~according to 3rd invention~~, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync

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block is defined so that that for said sub sync block of said color-difference signal of red color is greater than that for said sub sync block of said color-difference signal of blue color.

Specification at page 7, line 17:

~~The 5th invention~~ Still yet another aspect of the present invention is the image signal encoding device ~~according to 3rd invention~~, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that that for sub sync block of said color-difference signal of red color equals that for sub sync block of said luminescence signal.

Specification at page 7, line 24:

~~The 6th invention~~ A further aspect of the present invention is the image signal encoding device ~~according to 3rd invention~~, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that the ratio thereof among sub sync block of said luminescence signal and sub sync block of said color-difference signal of red color and sub sync block of said color-difference signal of blue color is 5 : 5 : 4.

Specification at page 8, line 7:

~~The 7th invention~~ A still further aspect of the present invention is the image signal encoding device ~~according to any one of 1st to 6th inventions~~, further comprising rate converting means of switching a kind of rate conversion with band limitation applied to said image signals, in accordance with the type of said compression mode,

wherein said encoding means equalizes the compression rates of said image signals subjected to rate-conversion, in all said compression modes.

Specification at page 8, line 16:

~~The 8th invention~~ A yet further aspect of the present invention is an image signal encoding method comprising at least an encoding step of dividing a luminescence signal and color-difference signals of image signals into macro blocks having a plurality of sub macro blocks, and encoding data of the macro blocks with use of any one of a plurality of compression modes of which compression rate is different each other, wherein the total numbers of sub macro blocks in said macro block are the same for the use of said all kind of compression modes.

Specification at page 9, line 1:

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~~The 9th invention~~ A still yet further aspect of the present invention is the image signal encoding method ~~according to 8th invention~~, wherein in said macro block, the ratio between sub macro blocks of said encoded luminescence signal and sub macro blocks of said encoded color-difference signals varies depending on said each compression modes.

Specification at page 9, line 7:

~~The 10th invention~~ An additional aspect of the present invention is an image signal encoding method comprising at least an encoding step of dividing a luminescence signal and a color-difference signal of image signals into units of macro block having a plurality of sub macro blocks, and encoding data in the macro blocks;

placing steps of placing encoded data into sync blocks each having a predetermined number of sub sync blocks each assigned a predetermined initial amount of codes,

wherein in said placing step, the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is arranged so that that for said sub sync block of said color-difference signal of red color is different from that for said sub sync block of said color-difference signal of blue color.

Specification at page 9 line 22:

~~The 11th invention~~ A still additional aspect of the present invention is the image signal encoding method ~~according to 10th invention~~, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that that for said sub sync block of said color-difference signal of red color is greater than that for said sub sync block of said color-difference signal of blue color.

Specification at page 10, line 4:

~~The 12th invention~~ A yet additional aspect of the present invention is the image signal encoding method ~~according to 10th invention~~, wherein the assignment of said predetermined initial amount of codes to each said sub sync block in said sync block is defined so that that for sub sync block of said color-difference signal of red color equals that sub sync block of for said luminescence signal.

Specification at page 10, line 11:

~~The 13th invention~~ A still yet additional aspect of the present invention is the image signal encoding method ~~according to 10th invention~~, wherein the assignment of said predetermined initial amount of codes to each said sub sync

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block in said sync block is defined so that the ratio thereof among sub sync block of said luminescence signal and sub sync block of said color-difference signal of red color and sub sync block of said color-difference signal of blue color is 5 : 5 : 4.

Specification at page 10, line 19:

~~The 14th invention~~ A supplementary aspect of the present invention is the image signal encoding method ~~according to any one of 8th to 13th inventions~~, further comprising a rate converting step of switching a kind of rate conversion with band limitation applied to said image signals in accordance with the type of said compression mode,

wherein in said encoding step, the compression rates of said image signals subjected to rate conversion are equalized in all said compression modes.

Specification at page 11, line 4:

~~The 15th invention~~ A still supplementary aspect of the present invention is a program for making a computer serve as the encoding means of dividing a luminescence signal and color-difference signals of image signals into macro blocks having a plurality of sub macro blocks and encoding the macro blocks selectively in any one of a plurality of compression modes of which compressing rate is different each other in the image signal encoding device ~~according to 1st invention~~.

Specification at page 11, line 12:

~~The 16th invention~~ A yet supplementary aspect of the present invention is a program for making a computer serve as all or a part of the encoding means of dividing a luminescence signal and a color-difference signal of image signals into units of macro block having a plurality of sub macro blocks, and encoding data in the macro block,

and placing means of placing encoded data into sync blocks each having a predetermined number of sub sync blocks each assigned a predetermined initial amount of codes in the image signal encoding device ~~according to 3rd invention~~.